

**Tru·Spec™**

PICO MACOM INC, U.S.A.

**CAM-35UNIV**  
**NTSC**

**AUDIO/VIDEO  
MODULATOR**

**Installation**

**And**

**Operation**

**Manual**

# SAFEGUARDS

## Important Information

### *Product Inspection*

Inspect the equipment for shipping damage. Should any damage be discovered, immediately file a claim with the carrier.

### *Important Safety Instructions*

To insure proper installation and operation, take a moment to read this guide before proceeding with the installation. If you have any questions or comments about the **CAM-35UNIV** modulator, please contact your dealer or have him contact the **PICO MACOM** Service Center at the phone numbers at the bottom of the page.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING:** TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. DO NOT OPEN THE CABINET, REFER SERVICING TO QUALIFIED PERSONNEL ONLY.

**CAUTION:** TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

**ATTENCION:** POUR PREVENIR LES CHOCS ELECTRIQUES, NE PAS UTILISER CETTE FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

**1. Read Instructions** - All safety and operating instructions should be read before the appliance is operated.

**2. Retain Instructions** - The safety and operating instructions should be retained for future reference.

**3. Heed Warnings** - All warnings on the appliance should be adhered to.

**4. Follow Instructions** - All operating and user instructions should be followed.

**5. Cleaning** - Unplug this appliance from the wall outlet before cleaning. Use a damp cloth for cleaning. Do not use liquid cleaners or aerosol cleansers.

**6. Do Not Use Attachments** - not recommended by the manufacturer or they may cause hazards.

**7. Water and Moisture** - Do not use this product near water - for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool - and the like.

**8. Accessories** - Do not place this product on an unstable cart, stand, tripod, bracket, or table. The product may fall, causing serious injury to a child or adult, and serious damage to the appliance.

**9. Ventilation** - This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to. Any slots or opening in the cabinet are provided for ventilation. To ensure reliable operation of the video product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface.

## Important Information can't

**10. Grounding or Polarization** - This video product is equipped with a polarized alternating - current line plug (a plug having one blade wider than the other). This plug will fit into the power socket only one way. This is a safety feature. If you are unable to insert the plug full into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

**11. Power Sources** - This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home, consult your appliance dealer or local power company.

**12. Power-cord Protection** - Power-supply cords should be routed so they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.

**13. Lightning** - For added protection for this product during a lightning storm, or when it is left unattended or unused for long periods of time, the unit should be disconnected.

**14. Power Lines** - An outside antenna system should not be located in the vicinity of overhead power lines, other electric light or power circuits, where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching power lines or circuits as contact with them may be fatal.

**15. Overloading** - Do not overload wall outlets and extension cords as this can result in risk of fire or electric shock.

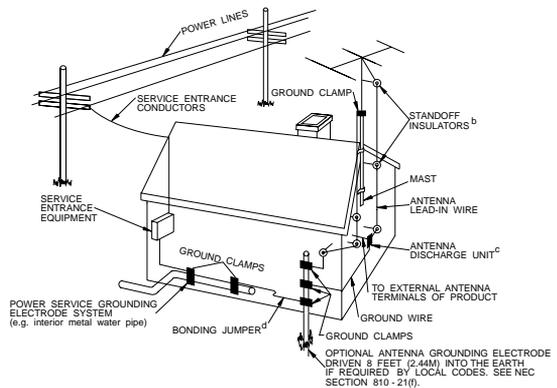
**16. Object and Liquid Entry** - Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

**17. Servicing** - Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

**18. Damage Requiring Service** - Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

- When the power-supply cord or plug is damaged.
- If liquid has been spilled, or objects have fallen into the product.
- If the product has been exposed to rain or water.
- If the product does not operate normally by following the operating instruction. Adjust only those controls that are covered by the operating instructions. An improper adjustment may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
- If the product has been dropped or the cabinet has been damaged.
- When the product exhibits a distinct change in performance - this indicates a need for service.

EXAMPLE OF ANTENNA GROUNDING ACCORDING TO NATIONAL ELECTRICAL CODE INSTRUCTIONS CONTAINED IN ARTICLE 810 - "RADIO AND TELEVISION EQUIPMENT"



**19. Replacement Parts** - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock or other hazards.

**20. Safety Check** - Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating conditions.

**21. Outdoor Antenna Grounding** - Before attempting to install this product, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges.

- Use No.10 AWG (5.3mm) copper, No.8 AWG (8.4mm) aluminum, No.7 AWG (10mm) copper-clad steel or bronze wire or larger, as ground wire.
- Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22m) to 6 feet (1.83m) apart.
- Mount antenna discharge unit as close as possible to where lead-in enters house.
- A driven rod may be used as the grounding electrode where other types of electrode systems do not exist. Refer to the National Electrical Code, ANSI/NFPA 70-1984 for information.
- Use jumper wire not smaller than No.6 AWG (13.3mm) copper or equivalent, when a separate antenna grounding electrode is used.

**NOTE TO THE CATV SYSTEM INSTALLER:**

THIS REMINDER IS PROVIDED TO CALL THE CATV SYSTEM INSTALLER'S ATTENTION TO ARTICLE 820 - 40 OF THE NEC THAT PROVIDES GUIDELINES FOR PROPER GROUNDING AND, IN PARTICULAR, SPECIFIES THAT THE CABLE GROUND SHALL BE CONNECTED TO THE GROUNDING SYSTEM OF THE BUILDING, AS CLOSE TO THE POINT OF CABLE ENTRY AS PRACTICAL.

# DESCRIPTION

## and Specifications

### CAM-35UNIV Consumer Agile Modulator



#### Features

- Excellent picture quality
- Microprocessor controlled PLL with user selectable output channel
- Tunes to UHF channels 14 through 69
- Tunes to CATV channels 37 through 125
- Minimum 35dBmV output
- Low spurious harmonic output
- HRC and IRC offset capable.
- Retains channel memory even after loss of power
- Attractive low profile consumer converter case

#### Description

The CAM-35UNIV modulates a video and Left & Right audio signal of a VCR, satellite receiver or security camera to a user selected TV channel. The modulator has a double sideband, 35 dBmV output that is free from spurious distortions. The microprocessor controlled Phase Lock Loop (PLL) circuitry allow selection of the output channel to be made from the front panel. The selected

channel number is displayed in the channel selection window. Non-volatile memory locks and holds the selected channel in case of the loss of input power. The agile design provides maximum flexibility while allowing installers to maintain an inventory of only two models to cover all NTSC channels. The CAM-35UNIV also supports HRC and IRC offsets and BTSC audio.

#### Specifications

##### RF

<b>Channels:</b>	UHF or Ultraband
<b>Output Level:</b>	35 dBmV minimum,
<b>Output Impedance:</b>	75 ohm
<b>Audio/Video Ratio:</b>	pre-set -15 dB below visual carrier
<b>Frequency Stability:</b>	±10 KHz,
<b>Spurious Output:</b>	>55 dB below video carrier (typical)

##### Video

<b>Input Level:</b>	1.0 V p-p min for 65 - 87.5% modulation
<b>Modulation Type:</b>	AM vestigial side band positive/negative
<b>Visual C/N:</b>	>55 dB

##### Audio

<b>Input Impedance:</b>	600 ohms unbalanced
<b>Baseband Input</b>	0.5 V <sub>p-p</sub> for 25 KHz peak deviation
<b>Output Format:</b>	BTSC (BTSC stereo capable)
<b>Pre-Emphasis:</b>	75* microsecond
<b>Flatness:</b>	2 dB max 50 Hz to 15 KHz

##### General

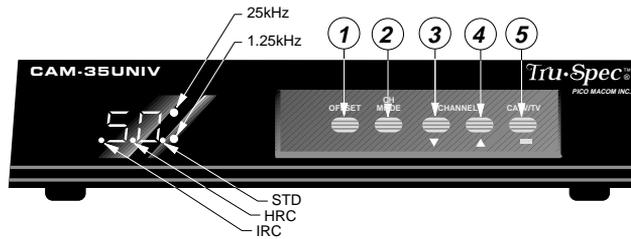
<b>Power Input:</b>	105 to 135 VAC, 60 Hz.
<b>Operating Temperature :</b>	0°C to 50°C
<b>Dimensions:</b>	1 7/8" x 6 3/4" x 5 1/4"
<b>Weight:</b>	1.5 pounds
<b>Connectors:</b>	
Input/Audio & Video	RCA type
Output	F type

Specifications subject to change without notice

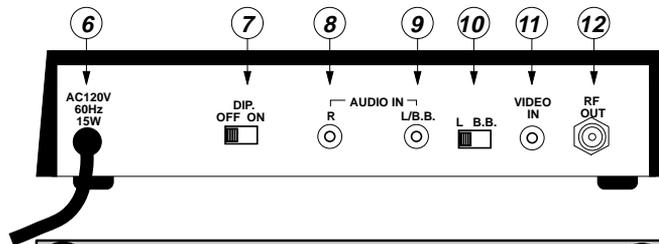
# PANELS

## Front & Rear Panels

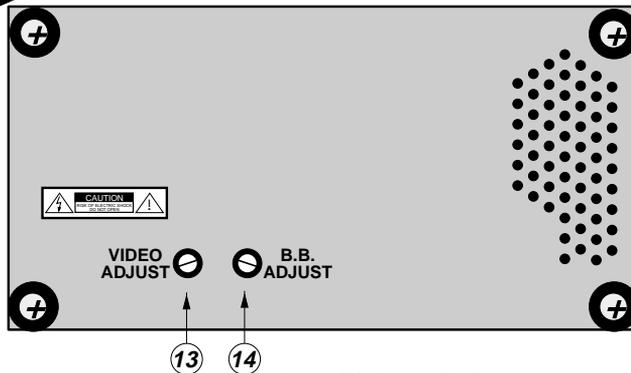
Front Panel



Rear Panel



Bottom Panel



- 1. Offset:**  
Selects 12.5 or 25 kHz offset.
- 2. Ch. Mode:**  
Selects Standard, HRC or IRC frequencies. Set in standard position unless your cable company requires HRC or IRC offset.
- 3. Channel Select:**  
Press button to select lower channel number
- 4. Channel Select:**  
Press button to select higher channel number.
- 5. CATV/TV**  
Selects cable or off-air modes. "Dot" appears on display when in CATV mode.
- 6. Power Cord:**  
Connect to 120 Vac, 60Hz electrical outlet.
- 7. Display on/off switch:**  
Set this switch to on to illuminate seven segment display on front panel and to activate front panel controls.
- 8. Right Audio In:**  
Accepts a balanced audio output from satellite receiver, VCR, cable converter, etc.
- 9. Left Audio and Baseband In:**  
Accepts a balanced audio output from satellite receiver, VCR, cable converter, etc.
- 10. Left Audio/Base Band Select:**  
If stereo sound is desired a BTSC stereo generator must be used. Set slide switch to B.B. and connect left audio to the composite out of the generator. See page 6.
- 11. Video Input:**  
Accepts video output from satellite receiver, VCR or cable converter.
- 12. RF Out:**  
To TV or distribution system.
- 13. Video Adjust:**  
Used to set video modulation level. Adjust for best picture.
- 14. B.B. Adjust:**  
Used to set audio modulation level. Adjust for desired sound level.

# INSTALLATION

## Installation Procedures

### 1. Electrical Connection:

Plug the power cord into 120 Vac, 60Hz electrical outlet.

### 2. Video and Audio Input Connections:

a. Slide the rear display switch to the ON position. This switch activates and deactivates the digital display and the channel selector buttons on the front panel.

b. Connect in the audio and video plugs from the input source to the AUDIO in and VIDEO in jacks respectively. For sources with only one audio output, connect to either the right or left jack.

c. Using the two front panel controls, select a channel between 14 and 69 for off-air or 37 to 125 for CATV. **NOTE:** The modulator's LED displays either off-air UHF or cable (CATV) channels.

d. After selecting the channel, slide the rear display switch, on rear panel, to the OFF position. This will disable the front panel tuning controls and turn off the LED display. The channel you have selected will be stored in memory.

### 3. RF Output Connections:

The CAM-35UNIV can be used for various applications to modulate a signal source such as a satellite receiver, VCR, laser disk player,

camcorder or surveillance camera to an ultraband CATV channel or a standard UHF channel.

### 4. Channel Selection Guidelines:

a. The CAM-35UNIV modulator converts your input source to either UHF or Cable (CATV) channels. Be sure your television set is tuned properly for off-air or cable reception.

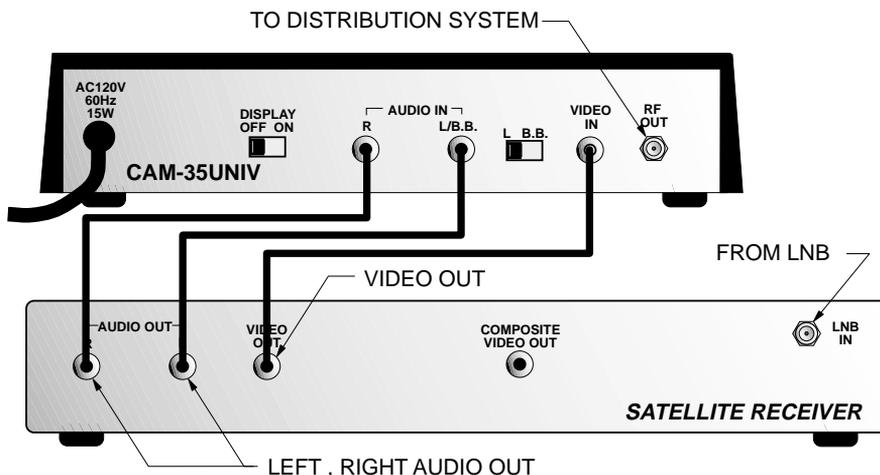
b. Do not select channels that are adjacent to a CATV or an active off-air channel. In applications using multiple modulators, do not set modulators to adjacent channels, for example 20, 21, 22.

c. Do not select a channel on which a local TV channel is being broadcast.

d. **Caution:** The lowest UHF frequencies, channels 14-19, have also been assigned as a commercial communications band. A nearby transmitter could cause intermittent interference on these channels.

### 5. Completion:

Once connections have been made and the desired channel has been selected, installation of the CAM-35UNIV is complete.

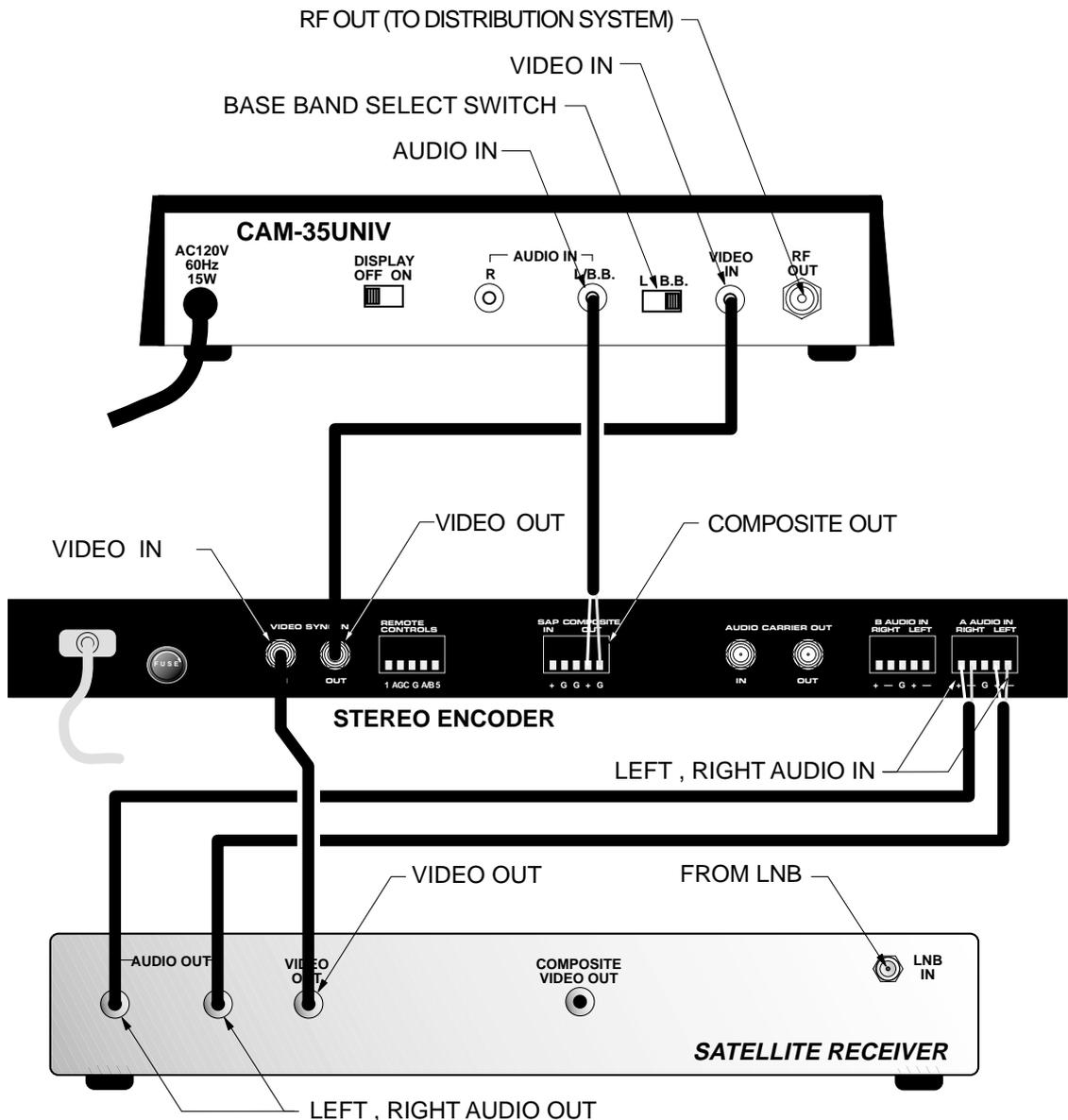


**Note:** If mono receiver is used, audio may be connected to either audio jack on CAM-35UNIV

# INSTALLATION

## Stereo Hook-Up

**Note:** To obtain stereo sound the CAM-35UNIV must be used with a stereo encoder. The method of installation is shown below.



# WARRANTY

## ONE YEAR LIMITED WARRANTY

**P**ico Macom, Inc. warrants to the original purchaser this product shall be free of defects in material and craftsmanship with only the limitations or exclusions set out below.

During the warranty period Pico Macom, Inc. or an authorized Pico Macom service facility will provide, free of charge, the parts and labor necessary to correct defects in material and workmanship.

### ***Warranty Duration***

This warranty shall terminate one year from the original date of purchase of the product or at a time the product is:

1. Misused or damaged due to neglect or improper installation
2. Modified
3. Repaired by someone other than the warrantor
4. Sold by the original purchaser

### ***Statement of Remedy***

To obtain such a warranty service, contact the salesperson where the product was obtained. You will be issued a Return Authorization (RA) number which will be used to track your product.

Be prepared to provide:

1. The model number and channel number of the product
2. The date of purchase
3. A specific identification of the problem

Deliver the products to Pico Macom, Inc. or ship the products in the original packing material at the address at the bottom of the page. Include satisfactory evidence of the date of purchase.

Products will not be accepted by Pico Macom, Inc. without the RA number clearly indicated on the shipping label.

The foregoing constitutes the Pico Macom, Inc. entire obligation with respect to this product and the original purchaser and any user or owner shall have ***no other remedy and no claim for incidental or consequential damages. Some states do not allow limitations on how long an implied warranty lasts or do not allow the exclusions or limitation of incidental or consequential damages, so the above limitation and exclusion may or may not apply to you.***

This warranty gives you specific legal rights, and you also have rights which vary from state to state.

# NOTES

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*PICO MACOM INC, U.S.A.*